



## TECHNICAL ARCHITECTURE REVIEW

<b>Project Name:</b>	<b>Office Productivity Suites</b>
<b>Requestor:</b>	<b>Ken Peterson</b>
<b>Date of Initial Request:</b>	<b>November 5, 2007</b>
<b>Request Description:</b>	<b>Determination of policy and implementation for ongoing office productivity suite use in State government. How should MS Office 2007 be supported and integrated into the existing environment? What are the document interchange standards recommendations? How should the State integrate other office suites and versions into this overall direction? What about the use of online suites such as Google documents?</b>
<b>Agency or Agencies:</b>	<b>Enterprise</b>
<b>Reviewers:</b>	<b>Bob Woolley and Dave Fletcher</b>
<b>ARB Acceptance Date:</b>	
<b>Agency Requestor Acceptance Date:</b>	

### Introduction and Background

The State currently supports a variety of office productivity suites with versions primarily from Microsoft, Corel, and OpenOffice. One of the key issues among these varying office suite versions is document interchange. An employee in one State agency needs to be able to send a document to another and have the document easily opened by the recipient. The State has used Microsoft Office 1997-2003 as a defacto standard for word processing, presentation, and spreadsheet applications since late 1999. A few agencies, such as Courts, the Legislature, and the Attorney General's office, have used the Corel application suite which is more commonly utilized in the legal community.

One of the main drivers for using Word, Excel, and PowerPoint has been the need to exchange documents with customers and other business partners external to the State where these applications are de facto standards. Office suites from a variety of vendors provide a much richer array of application resources, and the change in User Interface (UI) and document interchange

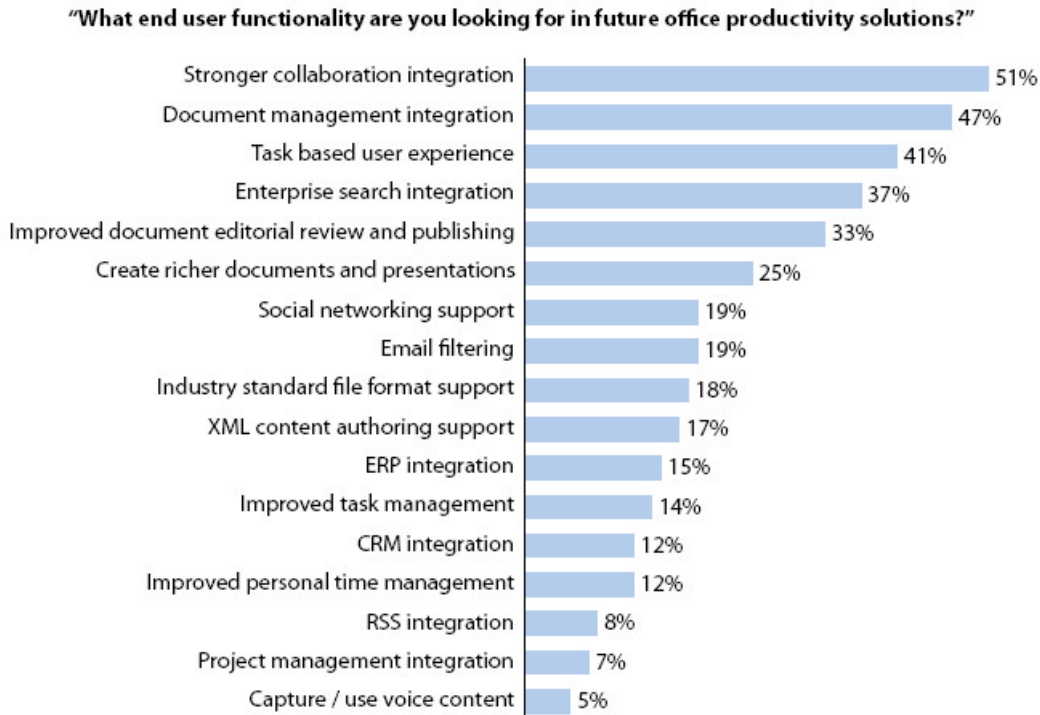
format reflected in Office 2007 provide ample reasons to review the current direction of the State in using and adopting office productivity suites.

### Objectives and Scope of Review

This review will examine currently available office productivity suites available to State employees from multiple vendors and make recommendations for future implementation and standards as appropriate. The review will also consider the need for standard document exchange formats to facilitate ease of information sharing. Issues associated with migrating from the current command driven UI to the Office 2007 Fluent UI will also be addressed.

### Needs of Office Suite Users

Forrester<sup>1</sup> has identified the basic functionalities that users are seeking from office productivity suites. It is safe to assume that many of these same functionality requirements will be common to State users.



Base: 118 business and IT decision-makers (multiple responses accepted)

Source: April and May 2006 Office Productivity Software Online Survey

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Source: Forrester Research, Inc.

Collaboration, document sharing, and overall integration of document creation processes lead the Forrester list. Anyone that has ever built a document in collaboration with others can readily understand the need for this functionality.

<sup>1</sup> McNabb, Kyle, *A Look at The Improvements and Shortcomings of Microsoft Office 2007 Desktop Applications*, Innovation Returns to Office Productivity Series, Forrester, July 17, 2007.

One could argue, however, that if all a user wants to do is create a document on their desktop, these functionalities may seem a little abstract. Published user needs information<sup>2</sup> does not suggest much beyond needs for basic functionality.

#### Baseline of Current Architecture

From a State of Utah perspective, the architecture specifically associated with office productivity suites is currently concerned with:

- lightweight database management (Access);
- spreadsheet and data analysis (Excel);
- presentation graphics (PowerPoint);
- diagramming and visualization (Visio); and,
- document authoring (Word).

All of these functions are served to some degree by the current installed base of office productivity applications. An approximation of the installed base<sup>3, 4</sup> of the State is listed in the following table:

	<b>ZEN Data</b>	<b>Total</b>	<b>%T</b>
Access (All Versions)	9,183	13,998	63.37
Excel (All Versions)	12,236	18,599	84.21
PowerPoint (All Versions)	12,081	18,363	83.14
Visio Licenses (All Versions)	1,238	1,882	65.78
Word Licenses (All Versions)	12,237	18,600	84.21

Data for calculating total licenses is based on an overall sample population of 14,531 desktops scanned by ZEN. The total estimated desktops are currently estimated at 22,087, based on desktop rate billing data as of November 2007.

The data represents all versions for these products. From a current versioning perspective, with Office 2007 as the most current installed version of the office suite, the ZEN data illustrates the diversity of the installed base as follows:

	<b>ZEN Data</b>	<b>%T</b>
Office 2007 (All Versions)	71	.56
Office XP (All Versions)	1,767	13.97
Office 2003 (All Versions)	3,749	29.64
Office 2000 (All Versions)	6,877	54.38
Office 97 (All Versions)	181	1.43
Office 95 (All Versions)	1	N/A
Office Suite Total	12,646	

<sup>2</sup> McAdams, Jennifer, *Out of Office*, Government Computer News, December 10, 2007.

<sup>3</sup> Oaks, Elaine, *Microsoft Purchase History Spreadsheets by Agency*, December 7, 2007.

<sup>4</sup> *ZenWorks Asset Management Reports*, December 7, 2007

From a de facto standard perspective, the Office 2000 suite is the most common. The age of these Office applications would imply a user need that is primarily focused on core functionality, as opposed to new and extended features. From an actual technology interoperability standard perspective, the real base standards are as follows:

- Word Processing: .doc format for Office 97-2003
- Spreadsheet: .xls format for Office 97-2003
- Presentation: .ppt format for Office 97-2003
- Database: .mdb format for Office 97-2003
- Diagramming and Visualization: .vsd Office 97-2003

As another point of interest, there are 21 different varieties of the Microsoft Office Suite installed, which leads to a greater level of complexity and lack of tool uniformity.

License purchase data provides approximate confirmation of the ZEN data. Individual product totals will not align perfectly with suite totals because of variation in license procurement and variations in the ZEN scans ability to separate components and versions from suites consistently.

#### Best Practices Review

Best practices diverge into technology best practice implementations such as XML, Web integration, and office suite document integration capabilities. Perhaps the most important best practice across all platforms is document interoperability. Feature comparisons in and of themselves do not provide a lot of insight from a best practice perspective.

#### Emerging Technologies and Trends

- Growth of opportunities for teaming and collaboration within office suites.
- Office suite implementation as an online service.
- Use of open source office suite applications.
- Migration from a well established command based UI to a fluent UI.
- Diversity of office suite applications with new and enhanced functionality.

#### Market Overview

The overall office suite market is characterized by the following product offerings:

- Microsoft Office Suites (All Versions): These are the dominant office application components and are common with most users and external State business partners.

- OpenOffice.org: The single most rapidly growing office suite. Over 50 million downloads have taken place. Use is granted under a general public license (GPL) and the application is able to read and produce documents in standard Microsoft document exchange formats.
- StarOffice: StarOffice is an open source application that offers some enhanced capability beyond OpenOffice.org but is fee based.
- Corel WordPerfect Office: This application suite is used primarily in specific niches (such as legal). The application can read and write documents in Microsoft Office document exchange formats.
- Software as a Service (SaaS): There is some limited use of Google Docs and ZoHo within State government. These applications can read OpenOffice.org documents and create files in standard exchange formats.

SaaS as an application delivery method will likely be a growing emphasis for major vendor branded office products. The trend toward SaaS is only likely to accelerate over the next two to three years, especially as leading vendors in this area develop improved methods for offline document creation.

There are an additional 29 office suite and component products<sup>5</sup> available from a wide range of vendors. None of these products seem to offer any unusual value to the State, and generally are serving the needs of small customer sets.

The diversity in office suite offerings seems to lend credence to the notion that document interchange capability is of more importance to users than a technology platform from any specific vendor.

### Office Suite Alternatives Analysis

**Office 2007:** Microsoft defines Office 2007 as a system, a combination of client and server capabilities to help users author, manage, collaborate, and use information. In addition to the desktop applications, Office 2007 includes a range of server software products aimed at supporting enterprise content management (ECM), workflow, BI, collaboration, search, project management, and business performance management.

Office 2007 offers many new applications solutions which are not currently in use across the State enterprise. The business value of these additions has not been established.

Office 2007 is designed for substantive back end integration with SharePoint, which is not a widely used platform within State government. This will impact the

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<sup>5</sup> Office Suite Comparison at <http://www.8daysaweek.co.uk/files/pdfs/OfficeSuiteCompare.pdf>

ability of the State to leverage some of the collaborative and integration benefits of Office 2007.

From a comparative perspective, the components of the full Office 2007 system are illustrated in the following table<sup>6</sup> from Forrester:

Office Application	Purpose
Access	Lightweight database management
Communicator	Unified communications client
Excel	Spreadsheet and data analysis
Groove	Team and peer-to-peer collaboration
InfoPath	e-forms creation and publishing
OneNote	Note taking and management
Outlook	Personal information management and communications
PowerPoint	Presentation graphics
Project	Project management
Publisher	Marketing materials and business publishing
SharePoint Designer	Web application builder for Microsoft Office SharePoint Server 2007
Visio	Diagramming and visualization
Word	Document authoring

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Source: Forrester Research, Inc.

The State has generally viewed and constrained office suites to include lightweight database (Access); spreadsheet and data analysis (Excel); presentation graphics (PowerPoint); diagramming and visualization (Visio); and document authoring (Word). The enterprise Office 2007 perspective represents a major functionality and integration shift. Office 2007 is designed to integrate with SharePoint 2007 resources which have little to no adoption in State agencies. Office 2007 offers the following improvements:

- Fluent UI provides more application functions that are easier to access by the user. The potential for users to find buried functions may be beneficial.
- Users can see the impact of format changes in real time. It isn't necessary to select a command to see if it provides the desired result. Changes are immediately visible before they are applied to the document.
- Galleries, instead of dialogs, make commands more results oriented. Fluent UI provides predefined galleries to make document formatting easier and faster. The net effect will save users time creating documents.

<sup>6</sup> McNabb, Kyle, *A Look at The Improvements and Shortcomings of Microsoft Office 2007 Desktop Applications*, Innovation Returns to Office Productivity Series, Forrester, July 17, 2007.

- Not all Office applications use the Fluent UI. Switching between Fluent and the command driven UI is difficult and can create confusion.
- Office 2007 provides optional add-ins to create PDF files directly.
- Office 2007 provides a compatibility pack download to facilitate document interchange between versions. The XML based file format used by Office 2007 can be set to only save documents in the earlier Office formats.
- An Open Document Format (ODF) converter is available for Office (<http://sourceforge.net/projects/odf-converter>). This converter allows Office 2007 and earlier versions to read open office files.
- The Office 2007 Trust Center provides enhanced security options for documents, spreadsheets, and presentations.
- SmartArt Graphics are available in Excel, PowerPoint, and Word 2007 which facilitates graphic sharing between applications. A user can render once and use many times.
- Excel 2007 users can create larger spreadsheets with up to one million rows and 16,000 columns.

**OpenOffice.org:** OpenOffice.org is one of the most rapidly growing office suites from an installed base perspective. The application offers much functionality not available in earlier Microsoft Office suites, and matches most of the major capabilities of Office 2007. There are no notable functionality gaps. Back end integration with SharePoint is not explicitly supported, so the collaborative capabilities of Office 2007 are more complete and robust. The application is available free of charge.

**StarOffice:** This suite from Sun offers most of the same features as OpenOffice.org, but is fee based. There are some UI refinements that seem superior to OpenOffice.org, but the application still uses a Command UI. The base cost for the application is \$79 per license.

**WordPerfect Office:** This suite is used by the Legislature, and by users that work with legal documents and briefs in a number of other agencies. The suite offers less overall functionality than the other suites previously mentioned. The strength of this suite is its word processing capability.

There are numerous other office suites and online applications available, but these four suites seem to do the best job of meeting existing State requirements.

## Financial Analysis

Cost analysis is restricted to cost comparisons for updates for existing licensure for Office 2007 components as compared to costs for OpenOffice.org, Star Office, and Google Docs. Doing nothing is also represented as an option. Calculations are based on 12,646 suites and 20,087 desktops.

	Unit Cost	Total Cost
Option 1. Upgrade Existing Suites to Office 2007 Pro+ <sup>7</sup>	\$308.28	\$3,876,621
Option 2. Upgrade All Users to Office 2007 Pro Standard <sup>8</sup>	\$237.35	\$4,750,797
Option 3. Migrate All Users to OpenOffice.org	\$ .00	\$ 0
Option 4. Migrate All Users to Star Office	\$ 79.00	\$1,586,873 <sup>7</sup>
Option 5. Migrate All Users to Google Docs	\$100.00	\$2,008,700 <sup>9</sup>
Option 6. Current Standard Upgrades as Needed		\$ 750,000 <sup>10</sup>

It is not cost effective to upgrade Word, Excel, and PowerPoint separately for users that currently have all three applications. Doing so costs \$135.48 per application. Using a suite like Office Professional Standard is the most cost effective approach. Individual upgrades for users that need only Word capability may be cost effective. Viewers are also available that do not require licensing to read Office 2007 documents.

## Security Review and Analysis

There are no substantial new security issues with documents provided by office suites. The primary security issues are access based, and maintenance of office suite upgrades and patches.

## Operational and Infrastructure Analysis

There are no significant operational or infrastructure issues associated with office suites, aside from interoperability, and development of standard install images.

## Solution Delivery Impact and Analysis

Applications that use document output as part of the application should use common interoperable formats such as PDF whenever possible. Data should generally be output in standard comma delimited file formats as specified in the *State of Utah Web Standards and Guidelines*. Output from applications that use standard State approved document exchange formats is acceptable.

## Agency Services Impact and Analysis

Agencies must determine and support specialized needs for document creation. In general, a least cost approach to office suites is the most easily supportable within agency resources. Agencies should ensure that advanced users have

<sup>7</sup> Office Suite 2007 Professional + includes Access, Excel, InfoPath, Outlook, PowerPoint, Publisher, and Word

<sup>8</sup> Office Suite 2007 Professional Standard includes Excel, Outlook, PowerPoint, and Word

<sup>9</sup> This is an annual cost based upon published rates. Actual bid costs will be lower.

<sup>10</sup> This is the current annual cost that agencies are expending for Office upgrades, per Elaine Oaks.



office suites available that meet their requirements. Agencies will need to ensure that application installations are defaulted to standard document exchange formats.

### Summary and Recommendations

Decisions on which direction to take on office suites have to be couched within a context of assumptions for the State. The assumption chosen will dictate the overall direction. Assumptions that drive the office suite recommendation include:

#### **Group A (Minimize Cost, and Emphasize Interoperability)**

**Assumption 1:** Document interoperability is more important than standardization on a specific vendor product version.

**Assumption 2:** It is in the best interests of the State to reduce expenditures on office suite products. Funding for major upgrades is not available.

**Assumption 3:** Most users of office suites use only basic core functionality, so training requirements are minimal.

**Assumption 4:** Command driven user interfaces meet existing user needs for document creation.

#### **Group B (Microsoft Product Standardization across the Enterprise)**

**Assumption 1:** Standardization on a specific office suite or version is in the best interest of the State from an economy of scale and functionality perspective.

**Assumption 2:** The State has the financial resources needed to upgrade existing users to a common version and platform.

**Assumption 3:** The State has a training plan that will support substantive change in office suite software.

**Assumption 4:** Existing users need new features beyond those already in use with existing platforms.

There are other groups that could be generated, but these two seem to represent the assumptions that will drive overall recommendations. Group B, which is a Microsoft only recommendation is likely impractical from a cost perspective as an overall solution. It does have practical application as a slowly phased implementation over time. For purposes of this analysis detailed recommendations will not be supplied, since this option represents current practice.

## Recommendations

The assumptions in group A seem to align most closely with what the State has done and what it can likely afford to do in the future. Based on Group A as a recommendation platform the State should:

- Establish a common document exchange standard for word processing, spreadsheet, presentation, visualization, and light-weight database files. This standard should incorporate existing Microsoft file formats and be interoperable with Office 2007 applications.
- Default installations of office suites in agencies to the common document exchange format standards.
- Allow agencies to use Office 2007 Pro Standard subject to agency preferences and budget availability.
- Support OpenOffice.org as a standard office suite with all document formats defaulted to the approved document exchange standard. Agencies with older versions of the Microsoft Office Suite, but with a limited upgrade budget, should be encouraged to migrate to OpenOffice under the Novell MLA.
- Use the OpenOffice license<sup>11</sup> provided under the MLA with Novell for implementation.
  - Novell licenses fonts from AGFA to match the kerning and spacing of the fonts available in Microsoft Office. This means that pagination and layout will remain the same across office suites, and an organization can have a mix of OpenOffice.org and MS Office users that can easily collaborate and share documents.
  - Support for the latest file formats from MS Office 2007. As part of the Microsoft/Novell interoperability agreement, OpenOffice.org Novell Edition will be the first to support the MS OpenXML formats (docx, xlsx, pptx). The Novell Edition includes support for Word 2007 docs (docx). Support for Excel 2007 and PowerPoint 2007 should be available in Q1 2008.
  - The Novell OpenOffice edition supports the majority of Visual Basic Macros found in Excel spreadsheets and Word documents. If a macro is not supported, a bug (Service Request) can be opened directly with Novell to provide a fix.

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<sup>11</sup> Gonzales, Charles, and Nathan Conger, *Telephone Interview regarding Open Office.org and OES from a Market Trend and Novell Perspective*, December 10, 2007.

- The State owns approximately 15,000 licenses to OpenOffice.org Novell Edition as part of the Open Workgroup Suite bundle.
- Establish an additional document exchange standard for Adobe PDF files for document exchange within and external to the State.
- Modify existing Office training classes that use the Command UI to incorporate training for OpenOffice.org which uses the same type of UI.
- Provide fee based training and/or online self paced training options for users of Office 2007 applications that use the Fluent UI.

These recommendations provide a least cost path for the State and still provide basic support for the vast majority of office suite users that use only basic functionalities of the component applications. These recommendations can be implemented within existing budgetary resources. The recommendations should be reviewed every two years to ensure reasonability and alignment with changing user requirements. Implementation of these recommendations will allow the State to maintain or reduce the existing office suite upgrade run rate of about \$750,000 per year with a probable net savings to agencies. Cost avoidance with these recommendations is estimated at between 2-3 million dollars.

These recommendations are not without some tradeoffs. Collaborative document preparation is arguably better supported in Office 2007. Document management remains an issue that requires resolution with any of the office suites. Some feature sets are not as well handled by the OpenOffice.org suite as they are in some of the commercial applications, but the differences<sup>12</sup> appear to be minimal, and impact only a small number of advanced or power users. Cost avoidance with this recommendation is estimated at between 2-3 million dollars.

From a needs perspective, the State still must establish recommendations and defined processes for document collaboration and document management. These core needs are, however, based more on business process than product features and can and should vary within agencies.

Will agencies migrate from older versions of the Microsoft Office suite to OpenOffice.org? The success of such a migration depends upon incentives to the agency to do so. OpenOffice needs to be positioned as a legitimate and supported alternative. Document interchange standards need to be met. The financial impact of the decision must leave some financial benefit to agencies for making the change. From a needs perspective it is estimated that fewer than 20% of office suite users<sup>13</sup> use capabilities beyond basic functionality.

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<sup>12</sup> Office Suite Comparison at <http://www.8daysaweek.co.uk/files/pdfs/OfficeSuiteCompare.pdf>

<sup>13</sup> McAdams, Jennifer, *Out of Office*, Government Computer News, December 10, 2007.

From an office suite migration trend perspective, Forrester suggests<sup>14</sup> that:

- The majority of enterprises (74%), on Microsoft Office 2003 and earlier versions, plan slow migration over a three to five year period for Office 2007. Only about 41% of organizations are planning for migration in a two-three year time period.
- Decreasing costs and user interface concerns are driving about 20% of organizations to look for Office 2007 alternatives.
- End user productivity is more important than lower license cost. The nature of the productivity impact over both the short and long term need to be considered.
- Open document standards are not a top of mind concern for most enterprises. It is interesting that OpenOffice provides the most comprehensive interoperability options of any of the office suites, since interoperability is a priority.

Enterprises expect Microsoft, Google, and OpenOffice.org to deliver substantial innovation in office productivity solutions in the future.

In summary, the decision on office suite implementation should no be made in isolation. Cost savings need to be balanced against demonstrable productivity gains. The strategy for workplace productivity needs to be articulated and communicated before any major change in direction toward new office suite implementations. SaaS is an important trend for the future of office applications as a delivery choice, and needs to be a three to five year consideration for planning.

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<sup>14</sup> McNabb, Kyle, *Office Productivity Software Trends: 2007 and Beyond*, Trends Series, Forrester, December 6, 2006.

## References

Gonzales, Charles, and Nathan Conger, *Telephone Interview regarding Open Office.org and OES from a Market Trend and Novell Perspective*, December 10, 2007.

McAdams, Jennifer, *Out of Office*, Government Computer News, December 10, 2007.

McNabb, Kyle, *A Look at The Improvements and Shortcomings of Microsoft Office 2007 Desktop Applications*, Innovation Returns to Office Productivity Series, Forrester, July 17, 2007.

\_\_\_\_\_, *Office Productivity Software Trends: 2007 and Beyond*, Trends Series, Forrester, December 6, 2006.

Oaks, Elaine, *Microsoft Purchase History Spreadsheets by Agency*, December 7, 2007.

*Office Suite Comparison* at  
<http://www.8daysaweek.co.uk/files/pdfs/OfficeSuiteCompare.pdf>

Open Office User Downloads at  
[http://wiki.services.openoffice.org/wiki/Market\\_Share\\_Analysis](http://wiki.services.openoffice.org/wiki/Market_Share_Analysis)

*ZenWorks Asset Management Reports*, December 7, 2007.